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IS 13520 (1992): Diamond Abrasive Frame Saw Blades [PGD 9: Abrasives]

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हीरा अपघर्षी फ्रेम के आरी के ब्लेड – विशिष्टि

Indian Standard

DIAMOND ABRASIVE FRAME SAW BLADES — SPECIFICATION

UDC 621·932·512·02 : 621·921·34

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

October 1992 **Price Group 2**

Abrasives Sectional Committee, PE 09

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Abrasives Sectional Committee had been approved by the Production Engineering Division Council.

Diamond frame saw blades are used in the stone industry for cutting different types of stone slabs. Optimum performance from a frame saw blade depends to a high degree on the wear characteristics of the selected bond and on correct selection of the diamond grain size. Other important factors are concentration, depth of diamond impregnation and cutting speed.

While preparing this standard, assistance has been derived from the data supplied by the users and from BS 2064 (Part 2) : 1976 'Diamond abrasive product : Part 2 Specification for diamond abrasive circular saws and frame saws', issued by the British Standards Institution.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

DIAMOND ABRASIVE FRAME SAW BLADES — SPECIFICATION

1 SCOPE

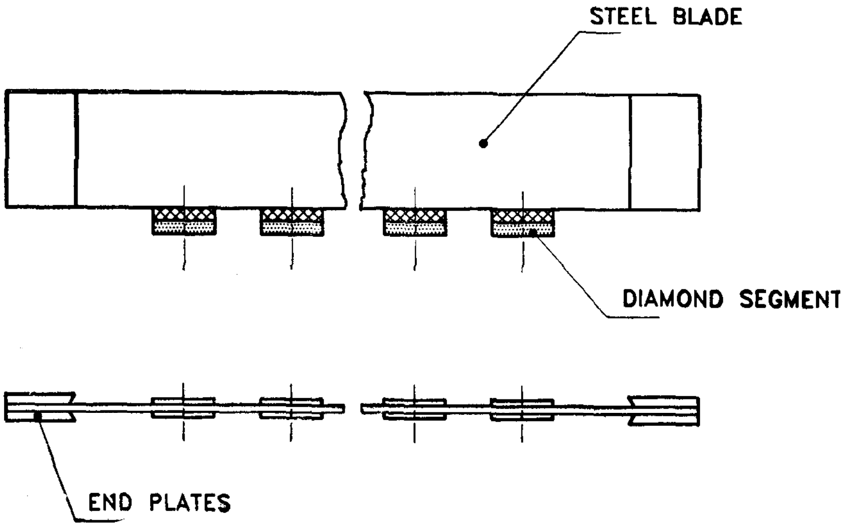
This standard covers the requirements for diamond abrasive frame saw blades.

2 REFERENCE

IS 10960 (Part 1) : 1984 'Grain sizes for diamond/cubic boron nitride : Part 1 Designation and grain size distribution' is the necessary adjunct to this standard.

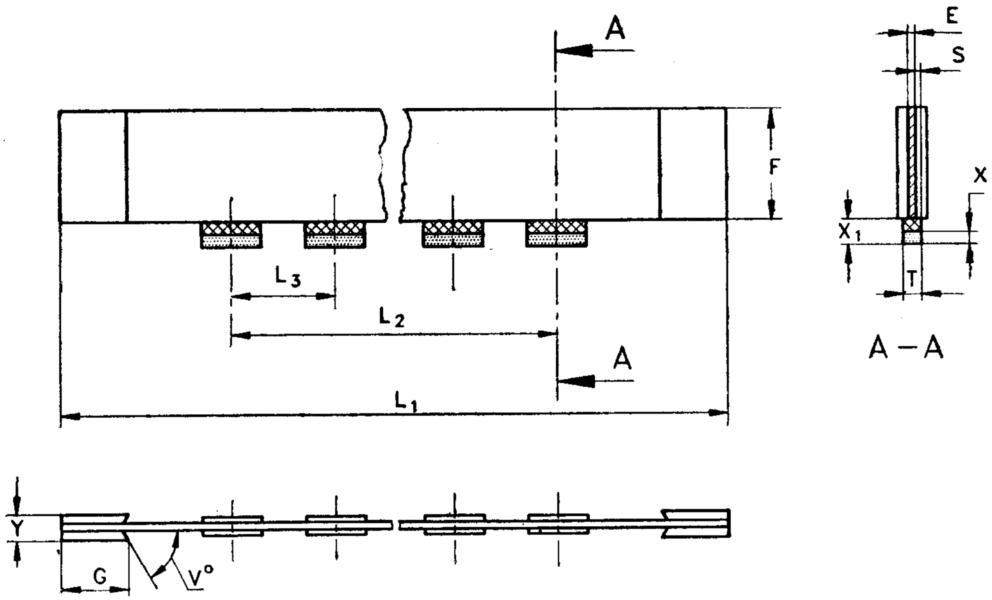
3 TERMINOLOGY

For the purpose of this standard, terms used in the following figure shall apply.



4 DIMENSIONS

Dimensions of diamond abrasive frame saw blades shall be as given below:



E Thickness of steel blade
F Depth of steel blade
G Length of end plates
L_1 Blade length
L_2 Segmented length
L_3 Segment spacing (Pitch)
S Side clearance
T Width of diamond segment
V Angle of end plates
X Depth of diamond section
X_1 Overall depth of segment
Y Overall thickness at end plates

All dimensions in millimetres.

Engaged Length/ Length of Slab to be Sawn, Max, L2	L_1	$F \times E$	T	Y	V
2 100	3 000	180 × 3	4·5	8·5-10·5	60°
2 250	3 150	180 × 3	4·5		
2 400	3 300	180 × 3	4·5		
2 700	3 600	180 × 3·5	5·0		
2 850	3 750	180 × 3·5	5·0		
3 000	3 900	180 × 3·5	5·0		
3 290	4 190	180 × 3·5	5·0		
3 300	4 200	180 × 3·5	5·0		
3 450	4 350	180 × 3·5	5·0		

NOTES

1 The overall depth of segment X_1 shall be as agreed between the manufacturer and the purchaser. For depth of diamond segment X, *see* **4.2.**

2 The pitch L_3 (that is, segment spacing) is decided by experience.

4.1 Width of cut (*T*) for diamond abrasive frame saw blades varies according to the material to be sawn.

Example:

Material	*Width of Cut*
Marble	4·5-5·0 mm
Sand stone	5·0 mm, *Min*

4.2 Depth of diamond segment (*X*) shall be selected from the following:

5·0, 6·5, 7.0 and 7·5 mm

4.3 Length of diamond segment is 20 mm.

5 MATERIAL

5.1 Body of the diamond abrasive frame saw blade shall be made of steel having tensile strength not less than 700 MPa.

(1 MPa = 0·102 kg/mm^2)

5.2 Diamond Segment

Diamond segment shall be made of diamond grains conforming to IS 10960 (Part 1) : 1984 bonded together with a suitable bonding material.

6 HARDNESS

Steel core of the diamond abrasive frame saw blade shall have a hardness of 450 HV, *Min.*

7 DESIGNATION

Diamond abrasive frame saw blade, used for cutting marble slab of 3 000 mm length; with its core cross section 180 × 3·5 mm; having width of cut (*T*) 5·0 mm and depth of impregnation (*X*) 5 mm; shall be designated as:

Diamond Frame Saw Blade IS 13520 3 900 × 180 × 3·5 — 20 x 5 x 5 — Marble 3 000

8 GENERAL REQUIREMENTS

8.1 The steel core of the blade shall be free from burrs, cracks, seams scales or other manufacturing defects.

8.2 In order to ensure better performance of diamond frame saw blades, adequate and accurately guided coolant flow shall be provided. A reference value for the required coolant quantity may be taken as 8 to 10 litres/minute.

8.3 The diamond frame saw blades are tensioned in the vertical frame or horizontal frame machines. These shall have the following recommended tensions:

Soft stone	80 to 110 kN
Hard stone	100 to 130 kN

8.3.1 After the blade is correctly tensioned, it shall display a concave flexure which may be measured on the back of the blade. It may be as follows:

In soft stone	1·5-3·5 mm
In hard stone	2·0-4·0 mm

The flexure may be measured over the backs of the blades with the help of a nylon cord or a straight edge. The check shall be carried out at the centre of the saw blade. For illustration, *see* Fig. 1.

9 RECOMMENDED DRIVE OUTPUT

The following are the recommended values of the power required while sawing:

0·75 kW/blade for soft stones
1·15 kW/blade for hard stones

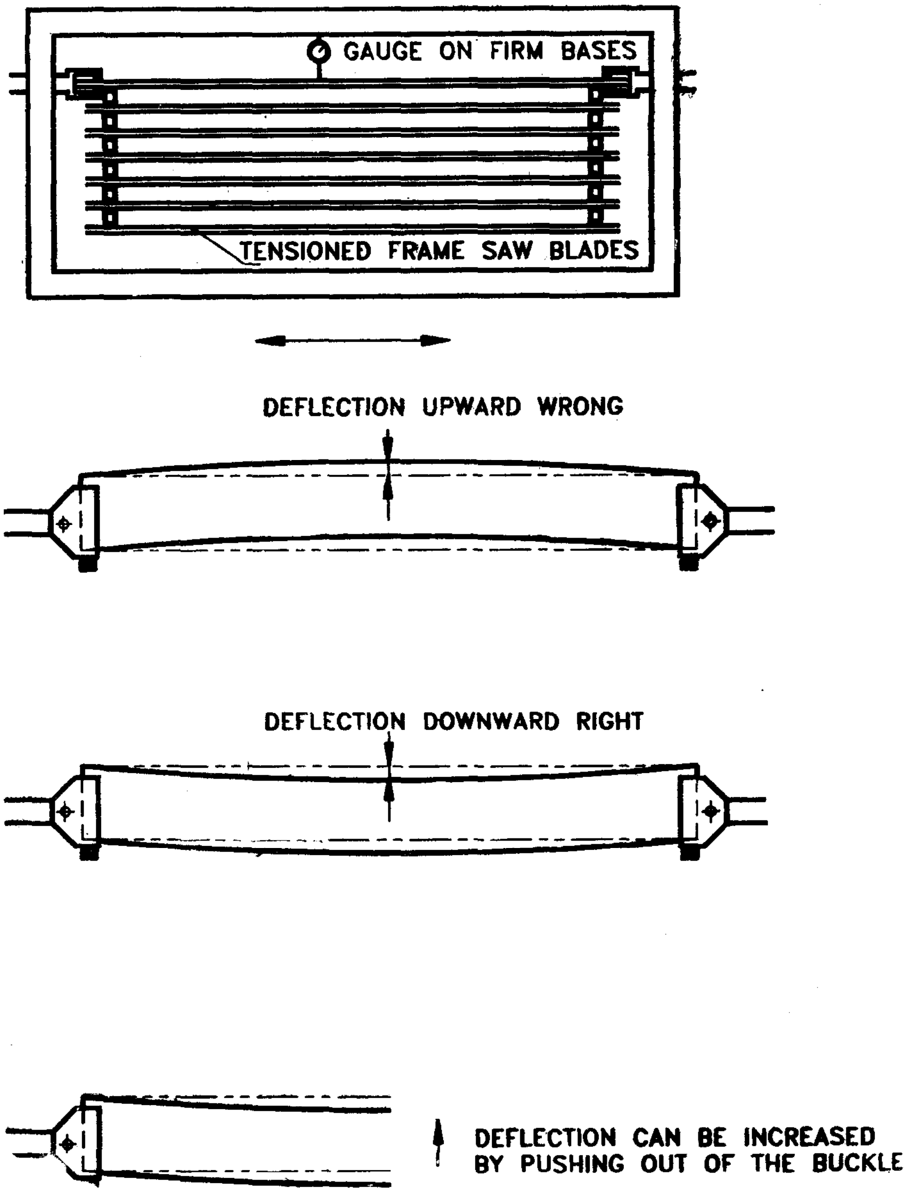

GAUGE ON FIRM BASES
TENSIONED FRAME SAW BLADES
DEFLECTION UPWARD WRONG
DEFLECTION DOWNWARD RIGHT
DEFLECTION CAN BE INCREASED BY PUSHING OUT OF THE BUCKLE

FIG. 1 TENSIONING AND ALIGNING SAW BLADES

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